

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions, and listings, of claims in the application:

1. (Currently amended) A biological agent detection apparatus, comprising:
a substrate;
an array of two or more sensors arranged on the substrate, wherein at least a first one of the sensors includes a sensing element configured to detect a biological agent; ~~and~~
a power module for supplying power to the detection apparatus;
a pick-up antenna, wherein the power is supplied by an external RF field received by the antenna;
a processing module directly coupled to each of the sensors and configured to process signals received from the two or more sensors to produce an output signal[[,]]; and
~~further including~~ a communication module configured to provide information to a user in response to the output signal having a value at or above a threshold value.
2. (Original) The apparatus of claim 1, wherein the processor is configured to execute a first process that detects a change in an environmental condition, and a second process that identifies an origin of the change in the environmental condition.
3. (Original) The apparatus of claim 2, wherein the second process includes a pattern recognition algorithm.
4. (Original) The apparatus of claim 1, further including a communication module configured to provide the output signal to an external intelligence device.
5. (Original) The apparatus of claim 4, wherein the communication module includes one of a wireless interface and a physical bus interface for communicating with the external intelligence device.

6. (Cancelled).

7. (Cancelled).

8. (Previously Presented) The apparatus of claim 1, wherein the communication module includes one of a LED, speaker, buzzer and vibration mechanism.

9. (Original) The apparatus of claim 5, wherein the wireless interface device includes one of an RF transmitter, an RF transceiver, an IR transmitter and an IR transceiver.

10. (Original) The apparatus of claim 5, wherein the physical bus interface includes one of an RS-232 port, a USB port and a Firewire port.

11. (Original) The apparatus of claim 1, wherein at least two of the sensors are polymer composite sensors.

12. (Original) The apparatus of claim 1, wherein at least a second one of the sensors is a chemical sensor.

13. (Original) The apparatus of claim 1, wherein the sensing element of the first sensor is selected from the group consisting of a polymer composite sensor, a surface modified carbon black sensor, a sol-gel encapsulated enzyme, a biopolymer, a self assembling monolayer, an intrinsically conducting polymer, a carbon nanotube composite, a nanogold composite and a nanoscale polymer composite.

14. (Original) The apparatus of claim 1, wherein the apparatus has a dimension of less than about 4 square inches.

15. (Original) The apparatus of claim 1, wherein the apparatus has a dimension of less than about 1 square inch.

16. (Original) The apparatus of claim 1, wherein the sensors and the processing module are integrated on the substrate.

17. (Original) The apparatus of claim 1, further including an attachment mechanism for allowing a user to wear the apparatus.

18. (Original) The apparatus of claim 17, wherein the attachment mechanism includes one of a clip and a pin.

19. (Original) The apparatus of claim 1, wherein the sensing element of the first sensor is an intrinsically conducting polymer selected from the group consisting of polyaniline and polythiophene.

20. (Original) The apparatus of claim 1, wherein the apparatus is used to diagnose a disease or determine a biological agent based on sampling the atmosphere or a bodily fluid.

21. (Original) The apparatus of claim 1, wherein a second one of the sensors includes a sensing element configured to detect a biological element different from the biological agent detectable by the first sensor.

22. (Original) The device of claim 21, further comprising a communication module configured to communicate with an external processor.

23. (Original) The device of claim 22, wherein the communication module includes a wireless transmitter device.

24. (Original) The device of claim 23, wherein the wireless transmitter device includes one of an RF transmitter and an IR transmitter.

25. (Previously Presented) A sensor system, comprising
a plurality of sensing devices, each device including an array of two or more sensors arranged on a substrate and a wireless communication module for remote communication;
and

a central processing node, located remote from said sensing devices, including a processing module and a communication module, said node being configured to receive and process signals from the plurality of sensing devices, and

wherein each sensing device includes a power source selected from the group consisting of a battery, a solar cell, an RF tag module and an IR tag module.

26. (Original) The system of claim 25, wherein at least a first one of said sensing devices includes a polymer composite sensor.

27. (Original) The system of claim 25, wherein each of said sensing devices includes a polymer composite sensor.

28. (Original) The system of claim 25, wherein at least a first one of said sensing devices includes a sensor configured to detect a biologic agent.

29. (Original) The system of claim 25, wherein at least a first one of said sensing devices includes a sensor configured to detect a chemical agent.

30. (Cancelled)

31. (Previously Presented) The apparatus of claim 25, wherein at least one sensing device includes a power source selected from one of the RF tag module and the IR tag module, and wherein the communication module of the central processing node includes one of a corresponding RF or IR transceiver for sending a corresponding RF or IR activation signal to the at least one sensing device and for receiving an information signal from the at least one sensing device.

32. (Original) The system of claim 25, wherein at least a first sensing device is selected from the group consisting of a polymer composite sensor, a surface modified carbon black sensor, a sol-gel encapsulated enzyme, a biopolymer, a self assembling monolayer, an intrinsically conducting polymer, a carbon nanotube composite, a nanogold composite and a nanoscale polymer composite.

33. (Original) The system of claim 25, wherein at least a first sensing device includes an intrinsically conducting polymer selected from the group consisting of polyaniline and polythiophene.

34. (New) The system of claim 1, further comprising a transistor housed on the substrate and configured to reduce noise and switch resistance for the two or more sensors.

35. (New) The system of claim 1, further comprising analog circuitry configured to provide gain, baseline tracking and radiometric sensing.

36. (New) The system of claim 1, further comprising:

wakeup circuitry coupled to the power module and configured to activate the two or more sensors at periodic times, and to turn off the two of more sensors at all other times.

37. (New) A wearable device for detection of a biological or chemical warfare agent, comprising:

a substrate;

an array of two or more sensors arranged on the substrate wherein at least a first one of the sensors includes a sensing element containing one of a polymer composite, a surface modified carbon black, a sol-gel encapsulated enzyme, a biopolymer, a self assembling monolayer, an intrinsically conducting polymer, a carbon nanotube composite, a nanogold composite, or a nanoscale polymer composite;

a processing module directly coupled to each of the sensors and configured to process signals received from the two or more sensors to produce an output signal; and

a communications module configured to provide information to a user in response to the output signal having a value at or above a threshold value.